
Certification Process

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Focus

- ◆ Overview of the certification process
- ◆ Certification tests
- ◆ Required certification tests by system type
- ◆ Certification application submittal & review
- ◆ Post certification quality assurance (QA)



Prerequisites Certification Process

- ◆ Submit a Certificate of Representation establishing an Authorized Account Representative
- ◆ Submit an initial monitoring plan
- ◆ Submit notification of initial certification testing 45 days prior to starting certification testing



Overview of the Certification Process

- ◆ Begin certification test period
- ◆ Conduct all required testing for the system(s) to be certified
 - DAHS Verification
 - 7-day Calibration Error
 - Cycle Time
 - Linearity
 - RATA & Bias Test

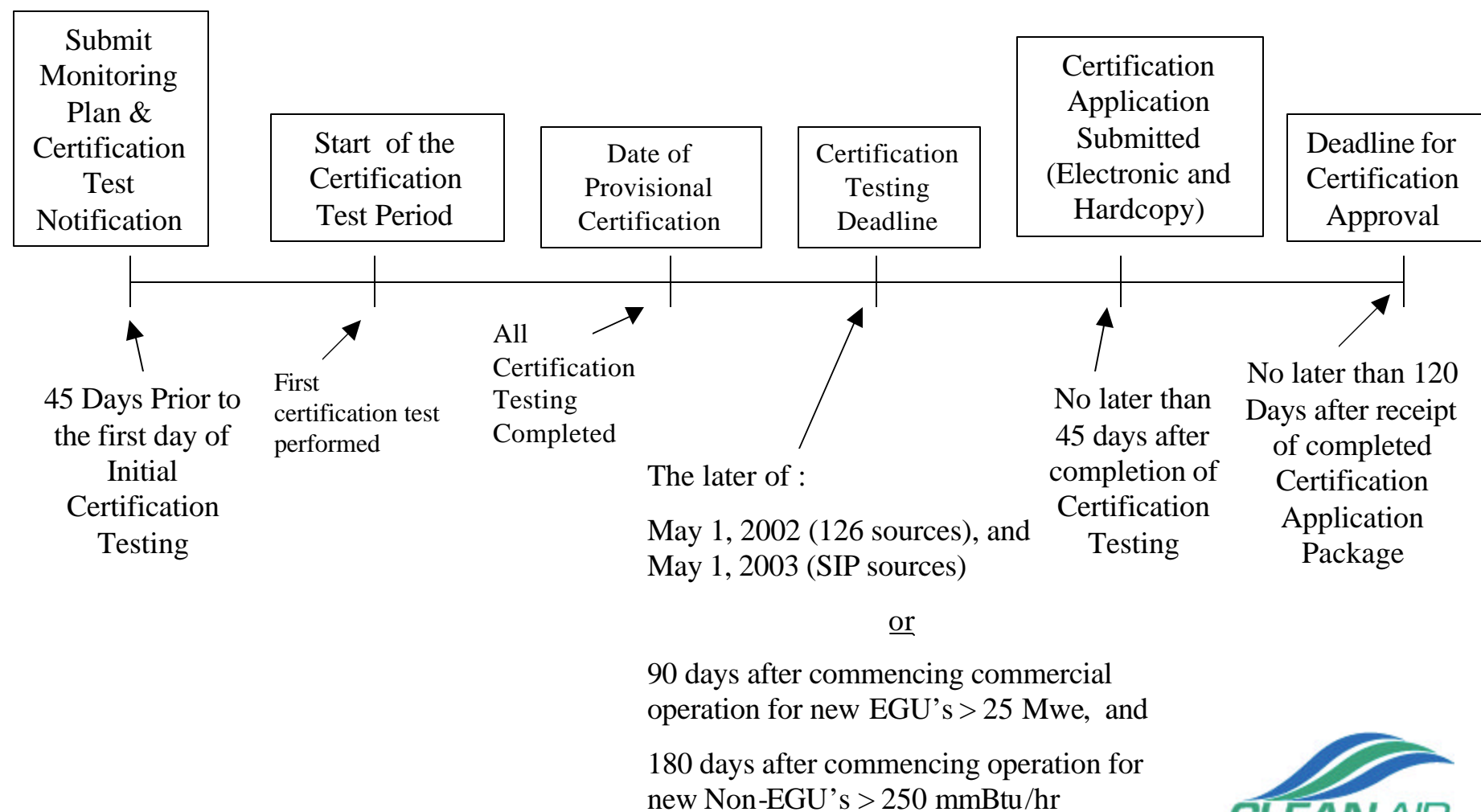


Overview of the Certification Process (cont.)

- ◆ Upon successful completion of all certification tests, the system(s) are provisionally certified
- ◆ The completed certification application is submitted within 45 days after completing all initial certification tests
- ◆ EPA has 120 days after receipt of a complete certification application to review the application



Initial Certification Timeline



Performance Tests for Gas Monitoring Systems

- ◆ 7-day Calibration Error Test
- ◆ Linearity Check
- ◆ Cycle Time Tests
- ◆ Relative Accuracy Test Audit (RATA)
- ◆ Bias Test



7-Day Calibration Error Test

- ◆ Measure the calibration error of each pollutant monitor while the unit is combusting fuel once each day for 7 consecutive operating days
 - Zero Gas (0 - 20% of span)
 - High Gas (80 - 100% of span)



Linearity Check

- ◆ 3 point check of the linearity of each pollutant monitor while the unit is combusting fuel at conditions of typical stack temperature and pressure
 - Low (20 - 30% of span)
 - Mid (50 - 60% of span)
 - High (80 - 100% of span)
- ◆ NO_x ranges under 30 ppm are exempt



Cycle Time Test

- ◆ Determine the time it takes for 95% of the step change to occur going from:
 - a stable zero gas value to the stack emission value, and
 - a stable high calibration gas value to the stack emission value
- ◆ The cycle time is the slower of the two responses



Relative Accuracy Test Audit

- ◆ Compares the CEMS measurements to the appropriate EPA reference method
- ◆ Conduct a minimum of 9 valid runs
 - May discard up to 3 runs but must report all runs performed
- ◆ Select reference method traverse points in accordance with part 75, Appendix A § 6.5.6
- ◆ Recommended that RATA not be commenced until completion of other required certification tests



Bias Test

- ◆ Statistical test that evaluates the RATA data to determine if a low bias exists in the CEMS measurements, and determine the need for calculating a Bias Adjustment Factor (BAF)
- ◆ The CEMS passes the bias test if the mean difference is less than or equal to the absolute value of the confidence coefficient:

$$d \leq |cc| = \text{Pass Bias Test; no BAF}$$



Required Certification Tests for NOx Concentration Systems

- ◆ 7-day Calibration Error Test
- ◆ Linearity Check
- ◆ RATA
- ◆ Bias Test
- ◆ Cycle Time Test
- ◆ DAHS Verification



Performance Specifications for NO_x Concentration Systems (App. A, § 3)

- ◆ 7-day Calibration Error (CE)
 - $CE \leq 2.5\%$ of Span or within 5 ppm of the reference gas
- ◆ Linearity Check
 - $LE \leq 5.0\%$ of reference gas or within 5 ppm of the reference gas
 - NO_x analyzer is exempt if span ≤ 30 ppm
- ◆ Cycle Time Test
 - Perform upscale and downscale tests
 - System Cycle Time ≤ 15 minutes



Performance Specifications for NO_x Concentration Systems (App. A, § 3) (cont.)

◆ Relative Accuracy:

- RA calculated on a ‘ppm’ basis
- $RA \leq 10.0\%$ or within 15.0 ppm of the average reference value

◆ Bias Test:

- No system shall be biased low as determined by the test procedure in § 7.6 of Appendix A
- A Bias Adjustment Factor (BAF) is applied to NO_x concentration data whenever a low bias is detected



Required Certification Tests for NO_x-Diluent Systems

- ◆ 7-day Calibration Error Test performed on both the NO_x Concentration and Diluent components
- ◆ Linearity Check performed on both the NO_x Concentration and Diluent components
- ◆ RATA and Bias Test
- ◆ Cycle Time Test performed on both the NO_x Concentration and Diluent components; cycle time for the system is the highest of the components
- ◆ DAHS Verification



Performance Specifications for NO_x-Diluent Systems (App. A, § 3)

- ◆ 7-day Calibration Error (CE)
 - NO_x: $CE \leq 2.5\%$ of Span or within 5 ppm of the reference gas
 - CO₂ or O₂: $|R - A| \leq 0.5\%$ CO₂ or O₂

Performance Specifications for NO_x-Diluent Systems (App. A, § 3) (cont.)

◆ Linearity Check

- NO_x Linearity Error (LE): $LE \leq 5.0\%$ of reference gas or within 5 ppm of the reference gas
- CO₂ or O₂: $LE \leq 5.0\%$ of reference gas or within 0.5% CO₂ or O₂ of the reference gas
- NO_x analyzer is exempt if span ≤ 30 ppm



Performance Specs. for NO_x-Diluent Systems (App. A, § 3) (cont.)

◆ Cycle Time Test

- Test NO_x and diluent analyzers separately (upscale and downscale)
- Cycle time for NO_x-diluent system = slowest of the analyzers' cycle times
- System Cycle Time ≤ 15 minutes



Performance Specs. for NO_x-Diluent Systems (App. A, § 3) (cont.)

◆ Relative Accuracy:

- RA calculated on a 'lb/mmBtu' basis
- $RA \leq 10.0\%$ or within 0.020 lb/mmBtu of the average reference value

◆ Bias Test:

- No system shall be biased low as determined by the test procedure in § 7.6 of Appendix A
- A Bias Adjustment Factor (BAF) is applied to NO_x emission rate data whenever a low bias is detected



Required Certification Tests for Stack Flow Systems

- ◆ 7-day Calibration Error Test
- ◆ RATA at three flue gas velocities
(except as provided by Part 75, App A, § 6.5.2)
- ◆ Bias Test at normal operating load
- ◆ DAHS Verification



Performance Specifications for Stack Flow Monitors (App. A, § 3)

- ◆ 7-day Calibration Error:

- $CE \leq 3\%$ of Span or within 0.01 in H₂O of the reference value for differential pressure systems

- ◆ Relative Accuracy:

- Test at 3 load levels for initial certification
- $RA \leq 10.0\%$ or within 2.0 fps of reference value

- ◆ Bias:

- No system shall be biased low as determined by the test procedure in § 7.6 of Appendix A
- A Bias Adjustment Factor (BAF) is applied whenever a low bias is detected



Required Certification Tests for Moisture Monitoring Systems

◆ Wet / Dry O₂ Systems

- 7-day Calibration Error Test of each O₂ component
- Cycle Time Test of each O₂ component
- Linearity Check of each O₂ component
- RATA; reference method is EPA Method 4
- DAHS Verification



Required Certification Tests for Moisture Monitoring Systems

- ◆ Temperature sensor and moisture lookup tables
 - A three temperature demonstration that the correct moisture value is taken from the moisture lookup table and applied to the emissions data
 - DAHS Verification
- ◆ Other continuous Moisture Sensors
 - RATA; reference method is EPA Method 4
 - DAHS Verification



Performance Specifications for Moisture Monitoring Systems (App. A, § 3)

◆ Relative Accuracy:

- $RA \leq 10.0\%$ or within $1.5\% \text{H}_2\text{O}$ of the average reference value
- May not use the wet-bulb dry-bulb approximation method
- If saturation is expected, perform reference method 4 and measure the stack temperature. Compare saturation chart value to the reference method. Use the lower moisture value of the two methods.



Required Certification Tests for Appendix D Systems

◆ Appendix D

- Fuel Flowmeter Accuracy Test, or
- Statement of calibration if the flowmeter can meet the accuracy standard by design
- DAHS Verification



Required Certification Tests (cont.)

◆ Appendix E

- Fuel Flowmeter Accuracy Test, or
- Statement of calibration if the flowmeter can meet the accuracy standard by design
- Four load NO_x Emission Rate Performance Test using EPA Method 20
- DAHS Verification



Certification Application

- ◆ There are two parts to the Certification Application
 - Electronic Portion
 - Hardcopy Portion



Electronic Portion of the Certification Application

- ◆ A complete, up-to-date version of the electronic monitoring plan in accordance with § 75.53
- ◆ The results of required certification test(s) performed
- ◆ Report all applicable 100, 500, 600 and 900 level records in EDR v2.1 format



Hardcopy Portion of the Certification Application

- ◆ Any changed portions of the hardcopy monitoring plan since submittal of the initial monitoring plan
- ◆ Test reports containing all information required by § 75.59(a)(9) necessary to support the testing results
- ◆ Certification Application Form (EPA form 7610-14)
 - www.epa.gov/airmarkets/forms/arp/certapp.pdf
- ◆ Signature of the Authorized Account Representative



Certification Application Submittal

- ◆ Electronic Portions (100, 500, 600, 900 RTs)
 - Send Electronic Certification Test Data in EDR v2.1 format to CAMD
 - Submit electronically via e-mail:
MPCert-Reg#@epa.gov
 - » MPCert-Reg1@epa.gov
 - » MPCert-Reg2@epa.gov
 - » And so on . . .
 - Copy EPA Region and State with hardcopy submittal



Certification Application Submittal (cont.)

◆ Hardcopy Portions

- Submit to EPA Region and State
- Includes:
 - » Test strategy/protocol
 - » Detailed test report for each Reference Method performed for certification
 - » DAHS verification
 - » 7-Day calibration test data
 - » Linearity report with protocol gas certifications
 - » Cycle Time test results



Recertification Events §75.20(b)

- ◆ Recertification Events include:
 - Permanent replacements of analyzers and monitoring systems
 - Change of probe or probe location
 - Change in monitoring methodology
 - Replacement of critical orifice in dilution probes resulting in a change in the dilution ratio



Recertification vs Diagnostic Events

- ◆ CAMD is working on guidance to better clarify which events require recertification and which will only require some level of diagnostic testing



Recertification Test Timelines § 75.20(b)(3)(iv)

- ◆ Each required test is to be completed no later than the following number of unit operating hours after the probationary calibration.
 - Linearity Check; 168 unit operating hours
 - RATA; 720 unit operating hours
 - 7-day calibration tests; 21 consecutive unit operating days



Cert/Recert Application Review -- 126 Affected Sources

- ◆ CAMD

- Reviews the electronic submission using MDC
- Sends feedback to Source, State, and EPA Region

- ◆ State and/or Region

- Reviews hardcopy information with the electronic portion and CAMD feedback
- Communicates/resolves any deficiencies with Source

- ◆ Approval

- State makes recommendation to Region & CAMD
- CAMD makes final approval decision



Initial Cert Application Review -- SIP Affected Sources

- ◆ CAMD

- Reviews electronic submission using MDC
- Sends feedback to Source, State, and EPA Region

- ◆ State

- Reviews the hardcopy information with the electronic portion and CAMD feedback
- Communicates/resolves any deficiencies with Source

- ◆ Approval

- State makes the final approval decision
- State notifies EPA Region and CAMD



Recertification Application Review -- SIP Affected Sources

◆ State

- Reviews the electronic submission using MDC
- Reviews the hardcopy information with the electronic portion
- Communicates/resolves any deficiencies with Source

◆ Approval

- State makes the final approval decision
- State notifies EPA Region and CAMD



Post Certification Quality Assurance

- ◆ Schedules for daily, quarterly, semiannual or annual quality assurance assessments are set starting with the quarter following the date of provisional certification
- ◆ Daily Assessments
 - Calibration Error Test
 - Daily Flow Interference Check
(stack flow monitoring systems)



Post Certification Quality Assurance (cont.)

- ◆ Quarterly Assessment
 - Linearity Checks
 - Leak Checks (differential pressure stack flow monitors)
 - Flow-to-Load Ratio, or Gross Heat Rate evaluations (stack flow monitoring systems)



Post Certification Quality Assurance (cont.)

- ◆ Semiannual and Annual Assessments
 - RATA, which is
 - » Required semiannually, unless
 - » Unit qualifies for annual RATA frequency under part 75, Appendix B § 2.3.1.2



Quality Assurance Testing Submittal & Review

◆ CAMD

- Receives and reviews QA records electronically in the quarterly EDR (RT 600)
- Sends MDC and ETS feedback to Source, State, and EPA Region
- Responsible for MDC error resolution for 126 program
- Responsible for ETS error resolution for all programs

◆ State and Region

- Receive and review hardcopy RATA test reports
- State responsible for MDC error resolution for SIP program



The End

Questions?

